

AMENDMENTS TO THE CLAIMS

Please add or amend the claims to read as follows, and cancel without prejudice or disclaimer to resubmission in a divisional or continuation application claims indicated as cancelled:

1. **(Currently Amended)** A method of transmitting in a multiple-input-multiple-output (MIMO) transmitters receivers system, comprising:
 - adaptively selecting a coding mode of each orthogonal frequency division multiplexing (OFDM) sub-carrier symbol of a data stream to be coded either in a diversity mode or to be coded in a multiplexing mode according to a feedback data packet having a coding information [[of]] related to the selected OFDM subcarrier symbol;
 - grouping subcarriers symbols coded according to the multiplexing mode in a first group;
 - grouping subcarrier symbols coded according to the diversity mode in a second group; and
 - transmitting the subcarrier symbols of the first group by a first antenna and the subcarrier symbols of the second group by a second antenna.
2. **(Previously Presented)** The method of claim 1, comprising:
 - adaptively grouping receivers according to said coding grouping information received with said feedback data packet to at least a first receivers group and a second receivers group;
 - decoding subcarrier symbols coded according to a multiplexing mode by the first receivers group with a multiplexing code decoding scheme; and
 - decoding subcarrier symbols coded according to a diversity mode by the second receivers group with a diversity code decoding scheme.
3. **(Currently Amended)** The method of claim 1, comprising
 - coding the data stream generated by said multiple-in multiple-out receivers-transmitters system in a diversity mode; and

coding the data stream generated by said multiple-input multiple-output receivers-transmitters system in a multiplexing mode.

4. (Cancelled)

5. **(Previously Presented)** The method of claim 1, comprising:

transmitting symbols of the first and second sub-carriers symbols data coded in the multiplexing mode by a first transmitter; and

transmitting symbols of the first and second sub-carriers coded in the diversity mode by a second transmitter.

6. **(Currently Amended)** A method comprising:

coding symbols of a first subset of sub-carriers of an orthogonal frequency division multiplexing channel in a diversity mode; and

coding symbols of a second subset of said sub-carriers of said orthogonal frequency division multiplexing channel in a multiplexing mode;

wherein, [[said]] coding each symbol of the first subset of sub-carriers and the second subset of carrier is [[selectable]] done according to a feedback data packet having a coding information of [[the]] each selectable OFDM subcarrier symbol;

transmitting said first subset of sub-carriers of said orthogonal frequency division multiplexing channel via a first antenna of a multiple-input-multiple-output (MIMO) system; and

transmitting said second subset of sub-carriers of said orthogonal frequency division multiplexing channel via a second antenna said (MIMO).

7. **(Previously Presented)** The method of claim 6 comprising:

adaptively grouping receivers according to a coding grouping information received with said feedback data packet to at least a first receivers group and a second receivers group;

decoding subcarrier symbols coded according to a multiplexing mode by the first receivers group with a multiplexing code decoding scheme; and

decoding subcarrier symbols coded according to a diversity mode by the second receivers group with a diversity code decoding scheme.

8. Cancelled.

9. **(Currently Amended)** A multiple-input-multiple-output (MIMO) transmitters receivers system, comprising:

first and second mappers to receive first and second encoded data streams and to output first and second orthogonal frequency division multiplexing sub-carriers symbols streams, respectively;

a coding mode selector to select a coding mode of a symbol of said first and second orthogonal frequency division multiplexing (OFDM) sub-carriers symbols streams according to a feedback data packet having coding information of the OFDM subcarrier symbol wherein, the coding mode is selected from a diversity mode and spatial multiplexing mode for each symbol of the OFDM sub-carriers symbol stream according to the coding information of the feedback data packet; and

a plurality of receivers to be adaptively grouped according to a coding grouping information related to each one of the sub-carriers symbols streams and received with [[said]] a received channel state information.

10. **(Previously Presented)** The multiple-input-multiple-output (MIMO) transmitters receivers system of claim 9, further comprising:

a channel state analyzer to select the coding mode based on a quality indicator of the orthogonal frequency division multiplexing sub-carrier of the first and second orthogonal frequency division multiplexing sub-carriers symbols streams.

11. Cancelled.

12. Cancelled.

13. **(Previously Presented)** The multiple-input-multiple—output (MIMO) transmitters receivers system of claim 9, comprising:

a first transmitter to transmit sub carriers symbols of the first and second orthogonal frequency division multiplexing sub-carriers symbols streams coded according to the diversity mode; and

a second transmitter to transmit sub carriers symbols of the first and second orthogonal frequency division multiplexing sub-carriers symbols streams coded according to multiplexing mode.

14. Cancelled.

15. **(Previously Presented)** The multiple-input-multiple-output (MIMO) transmitters receivers system of claim 13, wherein the second transmitter is able to transmit at least some of the coded symbols of the first and second orthogonal frequency division multiplexing sub-carriers symbols streams that are coded according to the diversity mode and at least some other coded symbols of the first and second orthogonal frequency division multiplexing sub-carriers symbols streams that are coded according to multiplexing mode.
16. Cancelled.
17. Cancelled.
18. Cancelled.
19. **(Currently Amended)** A wireless communication device comprising:
- a multiple-in-multiple-out receivers transmitters system operably coupled to two or more dipole antennas wherein, the multiple-in-multiple-out receivers transmitters system includes a transmitter system which includes:
 - first and second mappers to receive first and second encoded data streams and to output first and second orthogonal frequency division multiplexing sub-carriers symbols streams, respectively;
 - a coding mode selector to select a coding mode of a symbol of said first and second orthogonal frequency division multiplexing (OFDM) sub-carriers symbols streams according to a feedback data packet having coding information of the OFDM subcarrier symbol wherein, the coding mode is selected from a diversity mode and spatial multiplexing mode for each symbol of the OFDM sub-carriers symbol stream according to the coding information of the feedback data packet; and
 - a receiver system to be adaptively grouped according to a coding grouping information related to each one of the sub-carriers symbols streams and received with [[said]] a received channel state information.
20. **(Previously Presented)** The wireless communication device of claim 19, wherein the transmitter system comprises:

a channel state analyzer to select the coding mode based on a quality indicator of the orthogonal frequency division multiplexing sub-carrier of the first and second orthogonal frequency division multiplexing sub-carriers symbols streams.

21. Cancelled.

22. **(Previously Presented)** The wireless communication device of claim 19, wherein the transmitter system comprises:

a first transmitter to transmit sub carriers symbols of the first and second orthogonal frequency division multiplexing sub-carriers symbols streams coded according to the diversity mode; and

a second transmitter to transmit sub carriers symbols of the first and second orthogonal frequency division multiplexing sub-carriers symbols streams coded according to multiplexing mode.

23. Cancelled.

24. **(Previously Presented)** The transmitter system of claim 22, wherein the second transmitter is able to transmit at least some of the coded symbols of the first and second orthogonal frequency division multiplexing sub-carriers symbols streams that are coded according to the diversity mode and at least some other coded symbols of the first and second orthogonal frequency division multiplexing sub-carriers symbols streams that are coded according to multiplexing mode.

25. Cancelled.

26. Cancelled.

27. Cancelled.

28. Cancelled

29. Cancelled

30. Cancelled

31. Cancelled

32. Cancelled